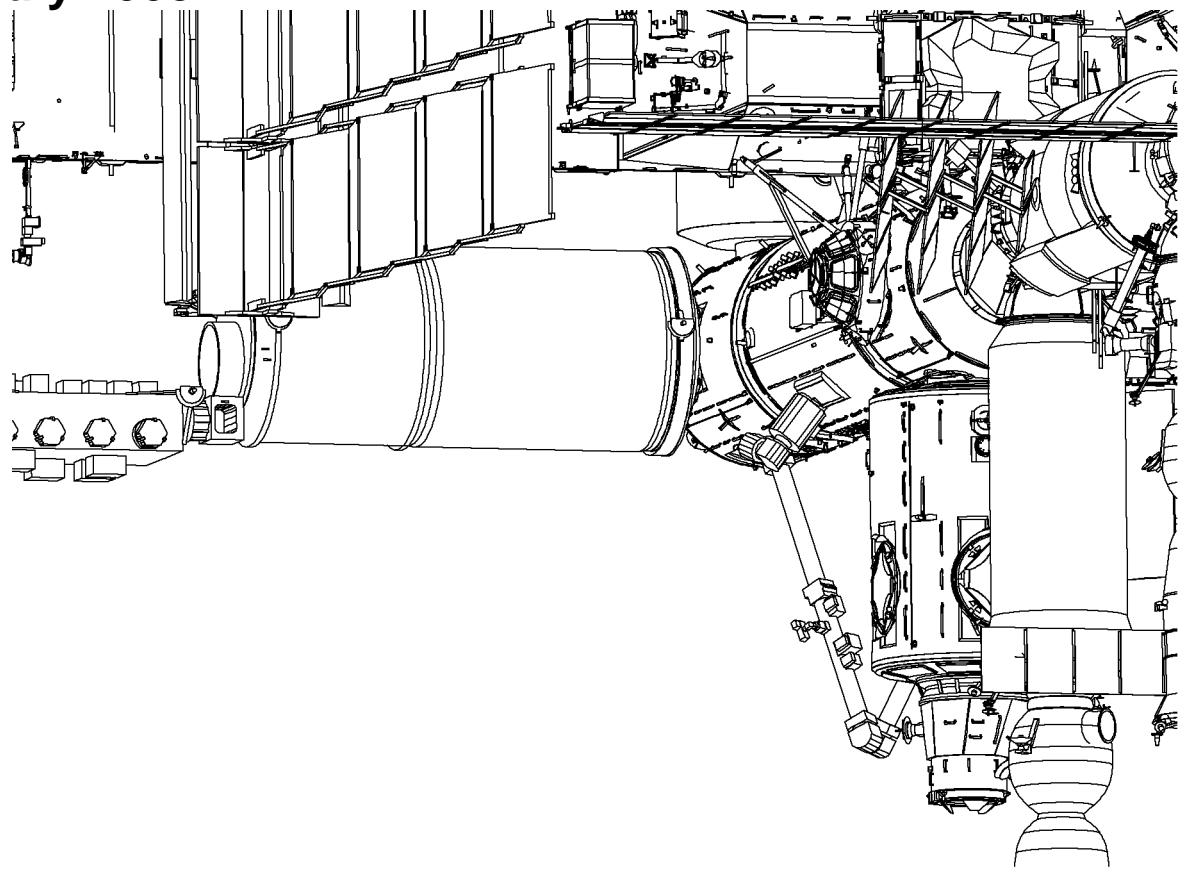


On-Orbit Assembly, Modeling, and Mass Properties Data Book

Volume II

International Space Station Program

July 2003



National Aeronautics and Space Administration
International Space Station Program
Johnson Space Center
Houston, Texas



**JSC 26557 REVISION Q - Supplemental
VOLUME II**

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VOLUMES I AND II

This revision of the *Data Book* was segmented into two volumes due to the document size and because of a smaller customer base requiring data in Volume II. Volume I contains free flying and Orbiter-attached configuration properties necessary to fulfill the requirements of the *ISS Technical Task Agreement JT-33*. In Volume II the mass property and aerodynamic data are organized into a multi-body system utilized by analysts. Volume II provides data used by a limited number of customers within the ISS analysis community.

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INTERNATIONAL SPACE STATION
ON-ORBIT ASSEMBLY, MODELING, AND MASS PROPERTIES
DATA BOOK

PREFACE

This document was constructed using the November 2002 NASA approved Assembly Matrix and the April 2003 Strategic Stage Mass Property Definition for United States On-Orbit Segment (USOS). Both of these documents were made by the Assembly and Configuration office.

The contents of this document are to be consistent with the tasks and products prepared by the International Space Station Program participants as specified in *Space Shuttle Program (SSP) 50011-01, Concept of Operation and Utilization, Volume I: Principles* and *SSP 50200-02, Station Program Implementation Plan, Volume II, Program Planning and Manifesting*.

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INTERNATIONAL SPACE STATION
ON-ORBIT ASSEMBLY, MODELING, AND MASS PROPERTIES
DATA BOOK

CONCURRENCE

JULY 2003

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INTERNATIONAL SPACE STATION
ON-ORBIT ASSEMBLY, MODELING, AND MASS PROPERTIES
DATA BOOK

LIST OF CHANGES

JULY 2003

<i>Data Book</i>	<i>Entry Date</i>	<i>Change</i>	<i>Paragraphs</i>
VOLUME I Revision Q Supplemental	July 2003	Baseline	All
	July 10, 2003	Element properties tables (on P87 – NASDA JEM PM 17A Stage)	7-15, 20, 21, 25, 32, 36, 47, 72, 87

VOLUME II Revision Q Supplemental	July 2003	Baseline	All

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This page included for formatting purposes.

8.0 BODY PROPERTIES

The Systems Engineering, Modeling, and Design Analysis (SEMDA) Lab I-DEAS model of the International Space Station (ISS) is organized to allow for dynamic analyses by the National Aeronautics and Space Administration (NASA) and contractor technical community. This organizational structure consists of a 29-body system composed of the various assembly elements and sub-elements, distributed into bodies on the basis of static, rotating and articulating bodies. RSA Progress and Soyuz module flights are classified as bodies as well due to their frequent arrival and departure. In addition, the Orbiter is defined as a body for appropriate Orbiter-attached configurations. Figure 8.0-1 illustrates the 29-body system. The 29 bodies are described below:

Note: Due to the limited range of ISS missions, this document will not contain data sets for all 29 bodies. In addition, bodies 26 and 28, the X-38 Crew Return Vehicle and Propulsion Module, respectively, have been de-manifested from the International Space Station Program (ISSP).

Body **1** contains the main truss boom, its integrated equipment and the module cluster, excluding the Soyuz and Progress modules. At Assembly Complete, this is by far the most massive ISS body.

Bodies **2** (starboard) and **3** (port) each have alpha axis rotations relative to Body 1. Each contains an integrated energy assembly for power generation.

Bodies **4** and **5** contain the starboard and port Thermal Control System (TCS) radiators, respectively. Each body employs a gamma axis rotation relative to Body 1.

Body **6** consists of the Mobile Servicing Center, plus Crew and Equipment Translation Aid carts. This body translates relative to body one only on the forward truss face on the Mobile Transporter rails.

Bodies **7** and **8** contain the starboard and port Science Power Platform (SPP) solar arrays, respectively. Each set of arrays rotates about an axis nominally aligned with the ISS alpha joint axis, centered at the attach point to the SPP Activator (See Body 25, below). Bodies 7, 8, and 25 can rotate together about a second, vertical axis.

Bodies **9, 11, 13** and **15** each contain an aft solar array mounted outboard of the alpha joints on the USOS truss. Each solar array rotates about an individual beta axis. Bodies 9 and 11 rotate about their beta axes relative to Body 2. Bodies 13 and 15 rotate about beta axes relative to Body 3.

Bodies **10, 12, 14** and **16** each contain a forward solar array mounted outboard of the alpha on the USOS truss. Each solar array rotates about an individual beta axis. Bodies 10 and 12 rotate about their beta axes relative to Body 2. Body 14 and 16 rotate about beta axes relative to Body 3.

Body **17** contains the Progress, and Soyuz vehicles attached to the Service Module aft docking port. Bodies **18** and **19** represent Progress and Soyuz vehicles attached to the nadir docking ports on the Zarya Functionalni Gruzvoi Blok (FGB), and Docking Compartment (DC) 1. Modules are docked at certain ports with specific solar array alignments. These bodies are added and removed from the ISS according to the assembly sequence logistics schedule.

Bodies **20** and **21** contain the starboard and port Zarya FGB solar arrays, respectively.

Bodies **22** and **23** contain the starboard and port Zvezda Service Module solar arrays, respectively.

Body **24** contains the Russian TCS Radiator. This body rotates with respect to the SPP module.

Body **25** contains the SPP Activator. It rotates itself and Bodies 7 and 8 about a vertical axis.

~~Body **26** contains the X-38 Crew Return Vehicle.~~

Body **27** contains the Space Shuttle vehicle. This body is added and removed from the ISS for appropriate Orbiter-attached configurations according to the assembly schedule.

~~Body **28** contains the Propulsion Module.~~

Body **29** contains the HTV.

Pivot point locations for articulating bodies are provided in Table 8.0-1. All pivot point locations are given with respect to the Space Station Analysis Coordinate System, and are listed in both millimeters and inches. Bodies 15 and 16 have locations listed for the P6 truss segment as attached to the initial position on the Zenith 1 (Z1) truss segment. Docking locations for Soyuz and Progress vehicles are listed in Table 8.0-2. Docking locations for Orbiter vehicles are listed in Table 6.3-1. Only those pivot points used for the range of ISS configurations in this document were listed.

Table 8.0-1 Body Pivot Point Locations

	X Location		Y Location		Z Location	
	(mm)	(inches)	(mm)	(inches)	(mm)	(inches)
Body 2	0	0.0	25831	1017.0	0	0.0
Body 3	0	0.0	-25831	-1017.0	0	0.0
Body 4	-122	-4.8	14691	578.4	1	0.0
Body 5	-122	-4.8	-14691	-578.4	1	0.0
Body 9	-1098	-43.2	33390	1314.6	660	26.0
Body 10	1812	71.3	33390	1314.6	-660	-26.0
Body 11	-1102	-43.4	48559	1911.8	660	26.0
Body 12	1808	71.2	48559	1911.8	-660	-26.0
Body 13	-1812	-71.3	-33419	-1315.7	-660	-26.0
Body 14	1098	43.2	-33419	-1315.7	660	26.0
Body 15	-1808	-71.2	-48559	-1911.8	-660	-26.0
Body 15*	-5210	-205.1	-1454	-57.2	-13764	-541.9
Body 16	1102	43.4	-48559	-1911.8	660	26.0
Body 16*	-3888	-153.1	1456	57.3	-13765	-541.9
Body 17	-35691	-1405.2	-6	-0.2	4142	163.1
Body 18	-11134	-438.3	-6	-0.2	5285	208.1
Body 18**	-11134	-438.3	-6	-0.2	14495	570.7
Body 19	-23701	-933.1	-6	0.2	9308	366.5
Body 20	-15103	-594.6	1459	57.4	4142	163.1
Body 21	-15103	-594.6	-1471	-57.9	4142	163.1
Body 22	-27699	-1090.5	1559	61.4	4142	163.1
Body 23	-27698	-1090.5	-1570	-61.8	4142	163.1

* Indicates position on the Z1 truss segment.

** Body 18 docked to the MTsM nadir docking port

Table 8.0-2 Docking Locations for Soyuz and Progress Vehicles

P= Progress and S= Soyuz

Configuration	RSA Module Type			S M	F G	M T	D C	U D	Body 17			Body 18			Body 19		
Number & Name	Body			a f t	a n d	a n d	n a d	n a d	(mm)			(mm)			(mm)		
	17	18	19	i r	d i r	d i r	i r	d i r	x	y	z	x	y	z	x	y	z
C150 (S001) 10A_AS2	P	S	P	P	S	P	P		-35691	-6	4142	-11134	-6	5285	-23701	-6	9308
(S004) 17A	P	S	P	P	S	P	S		-35691	-6	4142	-11134	-6	14495	-23701	-6	9308
(S006) 14A	P	S	S	P	S	S	S		-35691	-6	4142	-11134	-6	14495	-23701	-6	9308

**JSC-26557 REVISION Q - Supplemental
VOLUME II**

Technical Monitor		Title		
M. Jansen/EA4/281-483-8123		International Space Station Program Revision Q Supplemental The Twenty-Nine Body System		
Approved By				
M. Falou/LM/281-333-6326				
Produced By		Contract		Item Number
Jeff Froemming		NAS9-19100 Science Engineering Analysis & Test		03-DR0005
		NASA Center/Division	Revision	Date
		JSC/Systems Engineering Office	Original	7/01/03

Notes:

1. Not all visiting vehicles are manifested at ISS assembly complete, but are depicted herein.
2. Body 27, the Orbiter vehicle, is not shown.

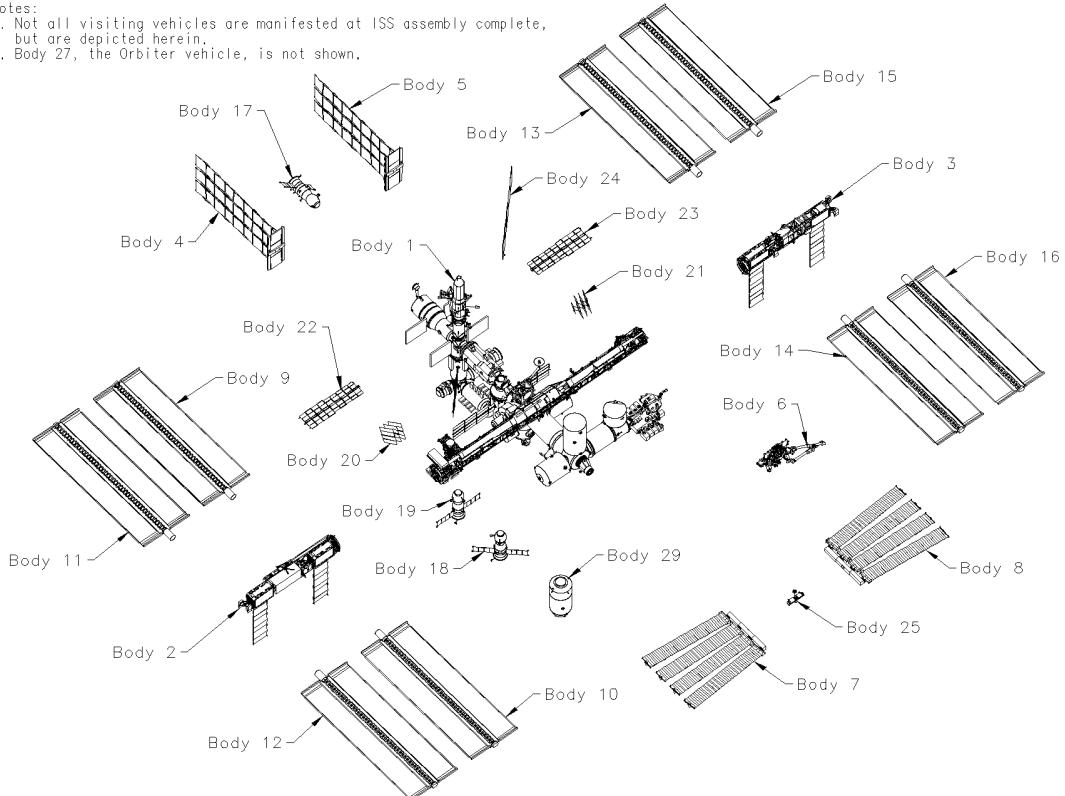


Figure 8.0-1 The Twenty-Nine Body System

**JSC-26557 REVISION Q - Supplemental
VOLUME II**

Technical Monitor	Title		
T. Farrell/EA4/281-483-8123	International Space Station Program		
Approved By	Body 01		
M. Falou/LM/281-333-6326	STEP 001		
Produced By	Contract		Item Number
Theresa Tran	NAS9-19100 Science Engineering Analysis & Test		03-MP0001
	NASA Center/Division	Revision	Date
	JSC/Systems Engineering Office	Original	06/13/03
Total mass:	354845.	lb	
	160955.	kg	
Center of mass:			
	X	Y	Z
	-22.61	.97	11.80 ft
	-6.89	.30	3.60 m
Inertia tensor*:			
	slug*ft**2		
	5937631.	-107008.	514164.
	-107008.	19835260.	-87172.
	514164.	-87172.	24428028.
	kg*m**2		
	8050343.	-145083.	697112.
	-145083.	26892990.	-118189.
	697112.	-118189.	33119944.
Principal moments of inertia (IXX, IYY, IZZ):			
	5922374.	19833673.	24443322. slug*ft**2
	8029906.	26891672.	33141708. kg*m**2
Principal to body roll, pitch, yaw in a 1 2 3 sequence:			
	-1.13	-1.59	-.43 degrees
Center of pressure:			
(WRT CM)	X ft	Y ft	Z ft
CPx	.00E+00	-6.94E-02	-7.89E+00
CPy	-6.32E+00	.00E+00	2.50E+00
CPz	3.73E+00	-2.91E-02	.00E+00
	X m	Y m	Z m
CPx	.00E+00	-2.12E-02	-2.41E+00
CPy	-1.93E+00	.00E+00	7.63E-01
CPz	1.14E+00	-8.88E-03	.00E+00
Projected areas:			
	X	Y	Z
	3090.37	2581.19	3504.52 ft**2
	287.11	239.80	325.58 m**2
*Off-diagonal elements are negative integrals			

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Technical Monitor		Title		
T. Farrell/EA4/281-483-8123		International Space Station Program		
Approved By		Body 01		
M. Falou/LM/281-333-6326		STEP 002		
Produced By		Contract		Item Number
Theresa Tran		NAS9-19100 Science Engineering Analysis & Test		03-MP0002
		NASA Center/Division	Revision	Date
		JSC/Systems Engineering Office	Original	06/13/03
Total mass:		387290. lb		
		175672. kg		
Center of mass:		X	Y	Z
		-17.40	2.73	12.15 ft
		-5.30	.83	3.70 m
Inertia tensor*:		slug*ft**2		
		6355662.	-1195344.	287519.
		-1195344.	23290446.	-155604.
		287519.	-155604.	28231616.
		kg*m**2		
		8617116.	-1620668.	389824.
		-1620668.	31577590.	-210970.
		389824.	-210970.	38276916.
Principal moments of inertia (IXX, IYY, IZZ):				
		6268042.	23367367.	28240530. slug*ft**2
		8498584.	31682864.	38290188. kg*m**2
Principal to body roll, pitch, yaw in a 1 2 3 sequence:				
		-2.06	-.72	-4.01 degrees
Center of pressure:				
(WRT CM)		X ft	Y ft	Z ft
		CPx .00E+00	-8.70E-01	-7.82E+00
		CPy -1.11E+01	.00E+00	2.12E+00
		CPz 3.25E+00	-2.31E-01	.00E+00
		X m	Y m	Z m
		CPx .00E+00	-2.65E-01	-2.38E+00
		CPy -3.38E+00	.00E+00	6.45E-01
		CPz 9.90E-01	-7.05E-02	.00E+00
Projected areas:		X	Y	Z
		3218.30	2598.58	3834.65 ft**2
		298.99	241.42	356.25 m**2
*Off-diagonal elements are negative integrals				

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Technical Monitor		Title		
T. Farrell/EA4/281-483-8123		International Space Station Program		
Approved By		Body 01		
M. Falou/LM/281-333-6326		STEP 003		
Produced By		Contract		Item Number
Theresa Tran		NAS9-19100 Science Engineering Analysis & Test		03-MP0003
		NASA Center/Division	Revision	Date
		JSC/Systems Engineering Office	Original	06/13/03
Total mass:		459924. lb		
		208618. kg		
Center of mass:		X	Y	Z
		-10.42	1.36	11.58 ft
		-3.18	.42	3.53 m
Inertia tensor*:		slug*ft**2		
		10396936.	916837.	230056.
		916837.	28147494.	669719.
		230056.	669719.	36360596.
		kg*m**2		
		14096346.	1243064.	311913.
		1243064.	38162860.	908016.
		311913.	908016.	49298328.
Principal moments of inertia (IXX, IYY, IZZ):				
		10437964.	28226841.	36418139. slug*ft**2
		14152411.	38271628.	49377876. kg*m**2
Principal to body roll, pitch, yaw in a 1 2 3 sequence:				
		4.80	- .44	2.93 degrees
Center of pressure:				
(WRT CM)		X ft	Y ft	Z ft
		CPx .00E+00	-2.04E+00	-6.06E+00
		CPy -1.39E+01	.00E+00	1.25E+00
		CPz 1.93E+00	-1.25E+00	.00E+00
		X m	Y m	Z m
		CPx .00E+00	-6.23E-01	-1.85E+00
		CPy -4.24E+00	.00E+00	3.82E-01
		CPz 5.89E-01	-3.82E-01	.00E+00
Projected areas:				
		X	Y	Z
		3747.88	2832.51	4359.06 ft**2
		348.19	263.15	404.97 m**2
*Off-diagonal elements are negative integrals				

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VOLUME II**

Technical Monitor	Title		
T. Farrell/EA4/281-483-8123	International Space Station Program		
Approved By	Body 01		
M. Falou/LM/281-333-6326	STEP 004		
Produced By	Contract		Item Number
Theresa Tran	NAS9-19100 Science Engineering Analysis & Test		03-MP0004
	NASA Center/Division	Revision	Date
	JSC/Systems Engineering Office	Original	06/13/03
Total mass:	547557.	lb	
	248368.	kg	
Center of mass:			
	X	Y	Z
	-12.15	1.17	14.74 ft
	-3.70	.36	4.49 m
Inertia tensor*:			
	slug*ft**2		
	11572671.	875079.	818463.
	875079.	30351310.	715548.
	818463.	715548.	37597040.
	kg*m**2		
	15690428.	1186447.	1109686.
	1186447.	41150832.	970152.
	1109686.	970152.	50974720.
Principal moments of inertia (IXX, IYY, IZZ):			
	11507779.	30313615.	37696652. slug*ft**2
	15602930.	41101000.	51111360. kg*m**2
Principal to body roll, pitch, yaw in a 1 2 3 sequence:			
	5.88	-1.72	2.59 degrees
Center of pressure:			
(WRT CM)	X ft	Y ft	Z ft
CPx	.00E+00	-5.56E-01	-5.76E+00
CPy	-1.43E+01	.00E+00	3.23E+00
CPz	3.42E+00	-1.04E+00	.00E+00
	X m	Y m	Z m
CPx	.00E+00	-1.70E-01	-1.76E+00
CPy	-4.37E+00	.00E+00	9.85E-01
CPz	1.04E+00	-3.18E-01	.00E+00
Projected areas:			
	X	Y	Z
	4222.36	3710.68	4395.58 ft**2
	392.27	344.73	408.36 m**2

*Off-diagonal elements are negative integrals

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Technical Monitor		Title		
T. Farrell/EA4/281-483-8123		International Space Station Program		
Approved By		Body 01		
M. Falou/LM/281-333-6326		STEP 005		
Produced By		Contract		Item Number
Theresa Tran		NAS9-19100 Science Engineering Analysis & Test		03-MP0005
		NASA Center/Division	Revision	Date
		JSC/Systems Engineering Office	Original	06/13/03
Total mass:		589401. lb		
		267348. kg		
Center of mass:		X	Y	Z
		-8.51	-.21	13.78 ft
		-2.59	-.06	4.20 m
Inertia tensor*:		slug*ft**2		
		13648369.	2055848.	1614345.
		2055848.	34141516.	884361.
		1614345.	884361.	42085532.
		kg*m**2		
		18504696.	2787354.	2188757.
		2787354.	46289660.	1199032.
		2188757.	1199032.	57060296.
Principal moments of inertia (IXX, IYY, IZZ):				
		13363020.	34209355.	42299746. slug*ft**2
		18118376.	46383076.	57352508. kg*m**2
Principal to body roll, pitch, yaw in a 1 2 3 sequence:				
		7.43	-3.03	5.52 degrees
Center of pressure:				
(WRT CM)		X ft	Y ft	Z ft
		CPx .00E+00	-7.03E-01	-5.48E+00
		CPy -1.36E+01	.00E+00	2.33E+00
		CPz 2.76E+00	-3.58E+00	.00E+00
		X m	Y m	Z m
		CPx .00E+00	-2.14E-01	-1.67E+00
		CPy -4.14E+00	.00E+00	7.10E-01
		CPz 8.43E-01	-1.09E+00	.00E+00
Projected areas:				
		X	Y	Z
		4543.65	3985.30	4714.04 ft**2
		422.12	370.25	437.95 m**2
*Off-diagonal elements are negative integrals				

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Technical Monitor		Title		
T. Farrell/EA4/281-483-8123		International Space Station Program		
Approved By		Body 01		
M. Falou/LM/281-333-6326		STEP 006		
Produced By		Contract		Item Number
Theresa Tran		NAS9-19100 Science Engineering Analysis & Test		03-MP0006
		NASA Center/Division		Revision
		JSC/Systems Engineering Office		Original
		Date		06/13/03
Total mass:		603575. lb 273777. kg		
Center of mass:		X	Y	Z
		-8.25	.40	13.50 ft
		-2.51	.12	4.11 m
Inertia tensor*:		slug*ft**2		
		15473456.	2181448.	1616649.
		2181448.	34545760.	1414662.
		1616649.	1414662.	43951544.
		kg*m**2		
		20979180.	2957645.	2191881.
		2957645.	46837740.	1918024.
		2191881.	1918024.	59590268.
Principal moments of inertia (IXX, IYY, IZZ):				
		15153555.	34526748.	44287524. slug*ft**2
		20546090.	46813416.	60047656. kg*m**2
Principal to body roll, pitch, yaw in a 1 2 3 sequence:		9.46	-2.89	6.21 degrees
Center of pressure:				
(WRT CM)		X ft	Y ft	Z ft
		CPx .00E+00	-5.01E-02	-5.54E+00
		CPy -1.34E+01	.00E+00	1.87E+00
		CPz 2.47E+00	-3.43E+00	.00E+00
		X m	Y m	Z m
		CPx .00E+00	-1.53E-02	-1.69E+00
		CPy -4.09E+00	.00E+00	5.69E-01
		CPz 7.53E-01	-1.04E+00	.00E+00
Projected areas:				
		X	Y	Z
		4616.26	4084.97	4778.73 ft**2
		428.87	379.51	443.96 m**2
*Off-diagonal elements are negative integrals				

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Technical Monitor		Title		
T. Farrell/EA4/281-483-8123		International Space Station Program		
Approved By		Body 02		
M. Falou/LM/281-333-6326		STEP 001 – STEP 002		
Produced By		Contract		Item Number
Theresa Tran	NAS9-19100 Science Engineering Analysis & Test		03-MP0007	
	NASA Center/Division		Revision	Date
	JSC/Systems Engineering Office		Original	06/13/03
Total mass:	52881.	lb		
	23986.	kg		
Center of mass:			X Y Z	
			1.08 122.51 .95 ft	
			.33 37.34 .29 m	
Inertia tensor*:				
			slug*ft**2	
	1007437.	-2868.	2924.	
	-2868.	68874.	1463.	
	2924.	1463.	962196.	
			kg*m**2	
	1365901.	-3889.	3965.	
	-3889.	93381.	1983.	
	3965.	1983.	1304562.	
Principal moments of inertia (IXX, IYY, IZZ):				
	1007603.	68861.	961982.	slug*ft**2
	1366168.	93366.	1304312.	kg*m**2
Principal to body roll, pitch, yaw in a 1 2 3 sequence:				
	.09	3.68	.17	degrees
Center of pressure:				
(WRT CM)	X ft	Y ft	Z ft	
CPx	.00E+00	1.47E-01	1.53E+01	
CPy	3.54E-01	.00E+00	1.17E+00	
CPz	1.96E-01	8.94E-01	.00E+00	
	X m	Y m	Z m	
CPx	.00E+00	4.47E-02	4.66E+00	
CPy	1.08E-01	.00E+00	3.56E-01	
CPz	5.96E-02	2.72E-01	.00E+00	
Projected areas:				
	X	Y	Z	
	1611.55	159.05	555.32 ft**2	
	149.72	14.78	51.59 m**2	

*Off-diagonal elements are negative integrals

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Technical Monitor		Title		
T. Farrell/EA4/281-483-8123		International Space Station Program		
Approved By		Body 02		
M. Falou/LM/281-333-6326		STEP 003 – STEP 006		
Produced By		Contract		Item Number
Theresa Tran	NAS9-19100 Science Engineering Analysis & Test		03-MP0008	
	NASA Center/Division		Revision	Date
	JSC/Systems Engineering Office		Original	06/13/03
Total mass:	56342.	lb		
	25556.	kg		
Center of mass:		X	Y	Z
		.81	122.07	.65 ft
		.25	37.21	.20 m
Inertia tensor*:				
		slug*ft**2		
	1038013.	-5395.	893.	
	-5395.	73801.	-1918.	
	893.	-1918.	992265.	
		kg*m**2		
	1407356.	-7315.	1211.	
	-7315.	100060.	-2601.	
	1211.	-2601.	1345330.	
Principal moments of inertia (IXX, IYY, IZZ):				
	1036966.	73531.	991227.	slug*ft**2
	1405980.	99698.	1343965.	kg*m**2
Principal to body roll, pitch, yaw in a 1 2 3 sequence:				
		-.12	.94	.32 degrees
Center of pressure:				
(WRT CM)		X ft	Y ft	Z ft
	CPx	.00E+00	4.03E-01	1.51E+01
	CPy	6.29E-01	.00E+00	1.47E+00
	CPz	-1.63E-01	8.75E-01	.00E+00
		X m	Y m	Z m
	CPx	.00E+00	1.23E-01	4.59E+00
	CPy	1.92E-01	.00E+00	4.48E-01
	CPz	-4.96E-02	2.67E-01	.00E+00
Projected areas:				
		X	Y	Z
		1651.82	159.20	616.31 ft**2
		153.46	14.79	57.26 m**2
*Off-diagonal elements are negative integrals				

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Technical Monitor	Title		
T. Farrell/EA4/281-483-8123	International Space Station Program		
Approved By	Body 03		
M. Falou/LM/281-333-6326	STEP 001 – STEP 006		
Produced By	Contract		Item Number
Theresa Tran	NAS9-19100 Science Engineering Analysis & Test		03-MP0009
	NASA Center/Division	Revision	Date
	JSC/Systems Engineering Office	Original	06/13/03
Total mass:	54934. lb		
	24918. kg		
Center of mass:			
	X	Y	Z
	.14	-122.69	.61 ft
	.04	-37.40	.19 m
Inertia tensor*:			
	slug*ft**2		
	985507.	-41073.	2073.
	-41073.	68619.	9376.
	2073.	9376.	943514.
	kg*m**2		
	1336167.	-55687.	2810.
	-55687.	93035.	12712.
	2810.	12712.	1279232.
Principal moments of inertia (IXX, IYY, IZZ):			
	987377.	66679.	943526. slug*ft**2
	1338744.	90407.	1279289. kg*m**2
Principal to body roll, pitch, yaw in a 1 2 3 sequence:			
	.62	2.16	2.54 degrees
Center of pressure:			
(WRT CM)	X ft	Y ft	Z ft
CPx	.00E+00	8.44E-02	1.55E+01
CPy	-1.23E+00	.00E+00	9.06E-01
CPz	-1.13E+00	-1.03E+00	.00E+00
	X m	Y m	Z m
CPx	.00E+00	2.57E-02	4.72E+00
CPy	-3.75E-01	.00E+00	2.76E-01
CPz	-3.45E-01	-3.15E-01	.00E+00
Projected areas:			
	X	Y	Z
	1612.62	156.72	576.82 ft**2
	149.82	14.56	53.59 m**2

*Off-diagonal elements are negative integrals

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Technical Monitor		Title		
T. Farrell/EA4/281-483-8123		International Space Station Program		
Approved By		Body 04		
M. Falou/LM/281-333-6326		STEP 001 – STEP 006		
Produced By		Contract		Item Number
Theresa Tran		NAS9-19100 Science Engineering Analysis & Test		03-MP0010
		NASA Center/Division		Revision
		JSC/Systems Engineering Office		Date
		Original		06/13/03
Total mass:		11454. lb 5196. kg		
Center of mass:		X	Y	Z
		-19.08	47.68	.07 ft
		-5.82	14.53	.02 m
Inertia tensor*:				
		slug*ft**2		
		41982.	3223.	-353.
		3223.	170959.	116.
		-353.	116.	139587.
		kg*m**2		
		56920.	4370.	-479.
		4370.	231790.	157.
		-479.	157.	189255.
Principal moments of inertia (IXX, IYY, IZZ):				
		41899.	171035.	139584. slug*ft**2
		56809.	231899.	189256. kg*m**2
Principal to body roll, pitch, yaw in a 1 2 3 sequence:				
		- .20	-.21	1.43 degrees
Center of pressure:				
(WRT CM)		X ft	Y ft	Z ft
		CPx .00E+00	4.69E-01	-5.16E-02
		CPy -1.96E+01	.00E+00	-6.54E-02
		CPz -5.14E+00	4.01E-01	.00E+00
		X m	Y m	Z m
		CPx .00E+00	1.43E-01	-1.57E-02
		CPy -5.96E+00	.00E+00	-1.99E-02
		CPz -1.57E+00	1.22E-01	.00E+00
Projected areas:				
		X	Y	Z
		451.58	2464.35	65.83 ft**2
		41.95	228.95	6.12 m**2
*Off-diagonal elements are negative integrals				

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Technical Monitor		Title		
T. Farrell/EA4/281-483-8123		International Space Station Program		
Approved By		Body 05		
M. Falou/LM/281-333-6326		STEP 001 – STEP 006		
Produced By	Contract		Item Number	
Theresa Tran	NAS9-19100 Science Engineering Analysis & Test		03-MP0011	
	NASA Center/Division	Revision	Date	
	JSC/Systems Engineering Office	Original	06/13/03	
Total mass:	11454.	lb		
	5196.	kg		
Center of mass:				
	X	Y	Z	
	-19.08	-47.68	-.07	ft
	-5.82	-14.53	-.02	m
Inertia tensor*:				
	slug*ft**2			
	41982.	-3223.	353.	
	-3223.	170959.	116.	
	353.	116.	139587.	
	kg*m**2			
	56920.	-4370.	479.	
	-4370.	231790.	157.	
	479.	157.	189255.	
Principal moments of inertia (IXX, IYY, IZZ):				
	41899.	171035.	139584.	slug*ft**2
	56809.	231899.	189256.	kg*m**2
Principal to body roll, pitch, yaw in a 1 2 3 sequence:				
	-.20	-.21	-1.43	degrees
Center of pressure:				
(WRT CM)	X ft	Y ft	Z ft	
CPx	.00E+00	-4.69E-01	5.16E-02	
CPy	-1.96E+01	.00E+00	6.54E-02	
CPz	-5.14E+00	-4.01E-01	.00E+00	
	X m	Y m	Z m	
CPx	.00E+00	-1.43E-01	1.57E-02	
CPy	-5.96E+00	.00E+00	1.99E-02	
CPz	-1.57E+00	-1.22E-01	.00E+00	
Projected areas:				
	X	Y	Z	
	451.58	2464.35	65.83	ft**2
	41.95	228.95	6.12	m**2
*Off-diagonal elements are negative integrals				

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Technical Monitor	Title		
T. Farrell/EA4/281-483-8123	International Space Station Program		
Approved By	Body 06		
M. Falou/LM/281-333-6326	STEP 001 – STEP 002		
Produced By	Contract	Item Number	
Theresa Tran	NAS9-19100 Science Engineering Analysis & Test	03-MP0012	
	NASA Center/Division	Revision	Date
	JSC/Systems Engineering Office	Original	06/13/03
Total mass:	6290. lb		
	2853. kg		
Center of mass:			
	X	Y	Z
	8.85	9.26	.10 ft
	2.70	2.82	.03 m
Inertia tensor*:			
	slug*ft**2		
	8636.	784.	206.
	784.	2885.	-191.
	206.	-191.	8663.
	kg*m**2		
	11708.	1063.	279.
	1063.	3911.	-259.
	279.	-259.	11746.
Principal moments of inertia (IXX, IYY, IZZ):			
	8887.	2772.	8524. slug*ft**2
	12050.	3758.	11557. kg*m**2
Principal to body roll, pitch, yaw in a 1 2 3 sequence:			
	-2.73	39.48	-5.96 degrees
Center of pressure:			
(WRT CM)	X ft	Y ft	Z ft
CPx	.00E+00	4.08E-01	-5.04E-01
CPy	6.97E-01	.00E+00	-9.07E-01
CPz	2.99E-01	2.85E-01	.00E+00
	X m	Y m	Z m
CPx	.00E+00	1.24E-01	-1.54E-01
CPy	2.13E-01	.00E+00	-2.76E-01
CPz	9.12E-02	8.69E-02	.00E+00
Projected areas:			
	X	Y	Z
	169.61	62.01	104.99 ft**2
	15.76	5.76	9.75 m**2
*Off-diagonal elements are negative integrals			

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Technical Monitor		Title		
T. Farrell/EA4/281-483-8123		International Space Station Program		
Approved By		Body 06		
M. Falou/LM/281-333-6326		STEP 003 – STEP 006		
Produced By		Contract		Item Number
Theresa Tran	NAS9-19100 Science Engineering Analysis & Test		03-MP0013	
	NASA Center/Division		Revision	Date
	JSC/Systems Engineering Office		Original	06/13/03
Total mass:		9880. lb		
		4481. kg		
Center of mass:		X	Y	Z
		11.50	12.06	1.74 ft
		3.50	3.68	.53 m
Inertia tensor*:				
		slug*ft**2		
		15302.	-3294.	-2337.
		-3294.	9121.	-2694.
		-2337.	-2694.	18232.
		kg*m**2		
		20747.	-4465.	-3168.
		-4465.	12367.	-3652.
		-3168.	-3652.	24719.
Principal moments of inertia (IXX, IYY, IZZ):				
		16367.	6684.	19604. slug*ft**2
		22191.	9062.	26580. kg*m**2
Principal to body roll, pitch, yaw in a 1 2 3 sequence:				
		-17.48	18.42	30.91 degrees
Center of pressure:				
(WRT CM)		X ft	Y ft	Z ft
	CPx	.00E+00	-1.09E+00	-1.13E+00
	CPy	6.85E-01	.00E+00	-3.62E-01
	CPz	2.05E-01	1.63E-01	.00E+00
		X m	Y m	Z m
	CPx	.00E+00	-3.34E-01	-3.44E-01
	CPy	2.09E-01	.00E+00	-1.10E-01
	CPz	6.24E-02	4.97E-02	.00E+00
Projected areas:				
		X	Y	Z
		208.95	104.98	164.22 ft**2
		19.41	9.75	15.26 m**2

*Off-diagonal elements are negative integrals

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Technical Monitor		Title		
T. Farrell/EA4/281-483-8123		International Space Station Program		
Approved By		Body 09		
M. Falou/LM/281-333-6326		STEP 001 - STEP 006		
Produced By		Contract		Item Number
Theresa Tran		NAS9-19100 Science Engineering Analysis & Test		03-MP0014
		NASA Center/Division		Revision Date
		JSC/Systems Engineering Office		Original 06/13/03
Total mass:		2368. lb 1074. kg		
Center of mass:		X -43.48 -13.25	Y 109.54 33.39	Z 2.31 ft .71 m
Inertia tensor*:		slug*ft^{**2} 6572. 12. 1251. 12. 128490. -1. 1251. -1. 134897.		
		kg*m^{**2} 8911. 16. 1696. 16. 174208. -1. 1696. -1. 182896.		
Principal moments of inertia (IXX, IYY, IZZ):		6560. 128486. 134905. slug*ft^{**2} 8894. 174208. 182913. kg*m^{**2}		
Principal to body roll, pitch, yaw in a 1 2 3 sequence:		.00	-.56	.01 degrees
Center of pressure:		(WRT CM) X ft Y ft Z ft CPx .00E+00 4.34E-03 4.54E-01 CPy -1.38E+00 .00E+00 -6.28E-01 CPz -2.11E+01 4.34E-03 .00E+00		
		X m Y m Z m CPx .00E+00 1.32E-03 1.38E-01 CPy -4.22E-01 .00E+00 -1.91E-01 CPz -6.44E+00 1.32E-03 .00E+00		
Projected areas:		X 70.52 6.55	Y 83.37 7.75	Z 3255.09 ft **2 302.41 m **2
*Off-diagonal elements are negative integrals				

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Technical Monitor	Title		
T. Farrell/EA4/281-483-8123	International Space Station Program		
Approved By	Body 10		
M. Falou/LM/281-333-6326	STEP 001 – STEP 006		
Produced By	Contract	Item Number	
Theresa Tran	NAS9-19100 Science Engineering Analysis & Test	03-MP0015	
	NASA Center/Division	Revision	Date
	JSC/Systems Engineering Office	Original	06/13/03
Total mass:	2368. lb		
	1074. kg		
Center of mass:			
	X Y Z		
	45.82 109.55 -2.02 ft		
	13.97 33.39 -.62 m		
Inertia tensor*:			
	slug*ft**2		
	6572. 12. -1251.		
	12. 128490. 1.		
	-1251. 1. 134897.		
	kg*m**2		
	8911. 16. -1696.		
	16. 174208. 1.		
	-1696. 1. 182896.		
Principal moments of inertia (IXX, IYY, IZZ):			
	6560. 128486. 134905. slug*ft**2		
	8894. 174208. 182913. kg*m**2		
Principal to body roll, pitch, yaw in a 1 2 3 sequence:			
	.00 .56 .01 degrees		
Center of pressure:			
(WRT CM)	X ft Y ft Z ft		
	CPx .00E+00 -4.10E-03 4.54E-01		
	CPy 1.38E+00 .00E+00 -6.28E-01		
	CPz 2.11E+01 -4.10E-03 .00E+00		
	X m Y m Z m		
	CPx .00E+00 -1.25E-03 1.38E-01		
	CPy 4.22E-01 .00E+00 -1.91E-01		
	CPz 6.44E+00 -1.25E-03 .00E+00		
Projected areas:			
	X Y Z		
	70.52 83.37 3255.09 ft**2		
	6.55 7.75 302.41 m**2		
*Off-diagonal elements are negative integrals			

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Technical Monitor	Title		
T. Farrell/EA4/281-483-8123	International Space Station Program		
Approved By	Body 11		
M. Falou/LM/281-333-6326	STEP 001 – STEP 006		
Produced By	Contract	Item Number	
Theresa Tran	NAS9-19100 Science Engineering Analysis & Test	03-MP0016	
		Revision	Date
	JSC/Systems Engineering Office	Original	06/13/03
Total mass:	2341. lb		
	1062. kg		
Center of mass:			
	X Y Z		
	-43.49 159.31 2.31 ft		
	-13.26 48.56 .71 m		
Inertia tensor*:			
	slug*ft**2		
	6499. 11. 1237.		
	11. 127054. -1.		
	1237. -1. 133390.		
	kg*m**2		
	8811. 15. 1677.		
	15. 172262. -1.		
	1677. -1. 180853.		
Principal moments of inertia (IXX, IYY, IZZ):			
	6487. 127050. 133398. slug*ft**2		
	8795. 172262. 180869. kg*m**2		
Principal to body roll, pitch, yaw in a 1 2 3 sequence:			
	.00 -.56 .01 degrees		
Center of pressure:			
(WRT CM)	X ft Y ft Z ft		
	CPx .00E+00 4.09E-03 4.54E-01		
	CPy -1.38E+00 .00E+00 -6.28E-01		
	CPz -2.11E+01 4.09E-03 .00E+00		
	X m Y m Z m		
	CPx .00E+00 1.25E-03 1.38E-01		
	CPy -4.22E-01 .00E+00 -1.91E-01		
	CPz -6.44E+00 1.25E-03 .00E+00		
Projected areas:			
	X Y Z		
	70.52 83.37 3255.09 ft**2		
	6.55 7.75 302.41 m**2		
*Off-diagonal elements are negative integrals			

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Technical Monitor		Title		
T. Farrell/EA4/281-483-8123		International Space Station Program		
Approved By		Body 12		
M. Falou/LM/281-333-6326		STEP 001 – STEP 006		
Produced By		Contract		Item Number
Theresa Tran		NAS9-19100 Science Engineering Analysis & Test		03-MP0017
		NASA Center/Division		Revision
		JSC/Systems Engineering Office		Date
		Original		06/13/03
Total mass:		2341. lb 1062. kg		
Center of mass:		X	Y	Z
		45.81	159.32	-2.02 ft
		13.96	48.56	-.62 m
Inertia tensor*:		slug*ft**2		
		6499.	11.	-1237.
		11.	127054.	1.
		-1237.	1.	133390.
		kg*m**2		
		8811.	15.	-1677.
		15.	172262.	1.
		-1677.	1.	180853.
Principal moments of inertia (IXX, IYY, IZZ):				
		6487.	127050.	133398. slug*ft**2
		8795.	172262.	180869. kg*m**2
Principal to body roll, pitch, yaw in a 1 2 3 sequence:		.00	.56	.01 degrees
Center of pressure:				
(WRT CM)		X ft	Y ft	Z ft
		CPx .00E+00	-4.10E-03	4.54E-01
		CPy 1.38E+00	.00E+00	-6.28E-01
		CPz 2.11E+01	-4.10E-03	.00E+00
		X m	Y m	Z m
		CPx .00E+00	-1.25E-03	1.38E-01
		CPy 4.22E-01	.00E+00	-1.91E-01
		CPz 6.44E+00	-1.25E-03	.00E+00
Projected areas:		X	Y	Z
		70.52	83.37	3255.09 ft**2
		6.55	7.75	302.41 m**2
*Off-diagonal elements are negative integrals				

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Technical Monitor	Title		
T. Farrell/EA4/281-483-8123	International Space Station Program		
Approved By	Body 13		
M. Falou/LM/281-333-6326	STEP 001 – STEP 006		
Produced By	Contract	Item Number	
Theresa Tran	NAS9-19100 Science Engineering Analysis & Test	03-MP0018	
		Revision	Date
	JSC/Systems Engineering Office	Original	06/13/03
Total mass:	2368. lb		
	1074. kg		
Center of mass:			
	X Y Z		
	-45.82 -109.64 -2.02 ft		
	-13.97 -33.42 -.62 m		
Inertia tensor*:			
	slug*ft**2		
	6572. 12. 1251.		
	12. 128490. -1.		
	1251. -1. 134897.		
	kg*m**2		
	8911. 16. 1696.		
	16. 174208. -1.		
	1696. -1. 182896.		
Principal moments of inertia (IXX, IYY, IZZ):			
	6560. 128486. 134905. slug*ft**2		
	8894. 174208. 182913. kg*m**2		
Principal to body roll, pitch, yaw in a 1 2 3 sequence:			
	.00 -.56 .01 degrees		
Center of pressure:			
(WRT CM)	X ft Y ft Z ft		
	CPx .00E+00 4.10E-03 4.54E-01		
	CPy -1.38E+00 .00E+00 -6.28E-01		
	CPz -2.11E+01 4.10E-03 .00E+00		
	X m Y m Z m		
	CPx .00E+00 1.25E-03 1.38E-01		
	CPy -4.22E-01 .00E+00 -1.91E-01		
	CPz -6.44E+00 1.25E-03 .00E+00		
Projected areas:			
	X Y Z		
	70.52 83.37 3255.09 ft**2		
	6.55 7.75 302.41 m**2		
*Off-diagonal elements are negative integrals			

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Technical Monitor	Title		
T. Farrell/EA4/281-483-8123	International Space Station Program		
Approved By	Body 14		
M. Falou/LM/281-333-6326	STEP 001 – STEP 006		
Produced By	Contract	Item Number	
Theresa Tran	NAS9-19100 Science Engineering Analysis & Test	03-MP0019	
		Revision	Date
	JSC/Systems Engineering Office	Original	06/13/03
Total mass:	2368. lb		
	1074. kg		
Center of mass:			
	X Y Z		
	43.48 -109.64 2.31 ft		
	13.25 -33.42 .71 m		
Inertia tensor*:			
	slug*ft**2		
	6572. 12. -1251.		
	12. 128490. 1.		
	-1251. 1. 134897.		
	kg*m**2		
	8911. 16. -1696.		
	16. 174208. 1.		
	-1696. 1. 182896.		
Principal moments of inertia (IXX, IYY, IZZ):			
	6560. 128486. 134905. slug*ft**2		
	8894. 174208. 182913. kg*m**2		
Principal to body roll, pitch, yaw in a 1 2 3 sequence:			
	.00 .56 .01 degrees		
Center of pressure:			
(WRT CM)	X ft Y ft Z ft		
	CPx .00E+00 -4.10E-03 4.54E-01		
	CPy 1.38E+00 .00E+00 -6.28E-01		
	CPz 2.11E+01 -4.10E-03 .00E+00		
	X m Y m Z m		
	CPx .00E+00 -1.25E-03 1.38E-01		
	CPy 4.22E-01 .00E+00 -1.91E-01		
	CPz 6.44E+00 -1.25E-03 .00E+00		
Projected areas:			
	X Y Z		
	70.52 83.37 3255.09 ft**2		
	6.55 7.75 302.41 m**2		
*Off-diagonal elements are negative integrals			

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Technical Monitor	Title		
T. Farrell/EA4/281-483-8123	International Space Station Program		
Approved By	Body 15		
M. Falou/LM/281-333-6326	STEP 001 – STEP 006		
Produced By	Contract	Item Number	
Theresa Tran	NAS9-19100 Science Engineering Analysis & Test	03-MP0020	
	NASA Center/Division	Revision	Date
	JSC/Systems Engineering Office	Original	06/13/03
Total mass:	2341. lb		
	1062. kg		
Center of mass:			
	X Y Z		
	-48.53 -159.39 -1.79 ft		
	-14.79 -48.58 -.55 m		
Inertia tensor*:			
	slug*ft**2		
	6134. 30. 67.		
	30. 130092. 0.		
	67. 0. 136074.		
	kg*m**2		
	8317. 41. 91.		
	41. 176381. 0.		
	91. 0. 184491.		
Principal moments of inertia (IXX, IYY, IZZ):			
	6134. 130088. 136069. slug*ft**2		
	8317. 176381. 184491. kg*m**2		
Principal to body roll, pitch, yaw in a 1 2 3 sequence:			
	.00 -.03 .01 degrees		
Center of pressure:			
(WRT CM)	X ft Y ft Z ft		
	CPx .00E+00 7.51E-02 2.28E-01		
	CPy 1.34E+00 .00E+00 -8.53E-01		
	CPz -1.84E+01 7.51E-02 .00E+00		
	X m Y m Z m		
	CPx .00E+00 2.29E-02 6.95E-02		
	CPy 4.09E-01 .00E+00 -2.60E-01		
	CPz -5.61E+00 2.29E-02 .00E+00		
Projected areas:			
	X Y Z		
	70.52 83.37 3255.09 ft**2		
	6.55 7.75 302.41 m**2		
*Off-diagonal elements are negative integrals			

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Technical Monitor		Title		
T. Farrell/EA4/281-483-8123		International Space Station Program		
Approved By		Body 16		
M. Falou/LM/281-333-6326		STEP 001 – STEP 006		
Produced By		Contract		Item Number
Theresa Tran	NAS9-19100 Science Engineering Analysis & Test		03-MP0021	
	NASA Center/Division		Revision	Date
	JSC/Systems Engineering Office		Original	06/13/03
Total mass:		2335. lb		
		1059. kg		
Center of mass:		X	Y	Z
		43.49	-159.31	2.31 ft
		13.26	-48.56	.71 m
Inertia tensor*:				
		slug*ft**2		
	6481.	11.	-1234.	
	11.	126707.	1.	
	-1234.	1.	133026.	
		kg*m**2		
	8787.	15.	-1673.	
	15.	171792.	1.	
	-1673.	1.	180359.	
Principal moments of inertia (IXX, IYY, IZZ):				
	6469.	126703.	133034.	slug*ft**2
	8771.	171792.	180375.	kg*m**2
Principal to body roll, pitch, yaw in a 1 2 3 sequence:				
	.00	.56	.01	degrees
Center of pressure:				
(WRT CM)		X ft	Y ft	Z ft
CPx	.00E+00	-4.20E-03	4.54E-01	
CPy	1.38E+00	.00E+00	-6.28E-01	
CPz	2.11E+01	-4.20E-03	.00E+00	
		X m	Y m	Z m
CPx	.00E+00	-1.28E-03	1.38E-01	
CPy	4.22E-01	.00E+00	-1.91E-01	
CPz	6.44E+00	-1.28E-03	.00E+00	
Projected areas:				
		X	Y	Z
	70.52	83.37	3255.09	ft**2
	6.55	7.75	302.41	m**2

*Off-diagonal elements are negative integrals

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Technical Monitor	Title		
T. Farrell/EA4/281-483-8123	International Space Station Program		
Approved By	Body 17		
M. Falou/LM/281-333-6326	STEP 001 – STEP 006		
Produced By	Contract		Item Number
Theresa Tran	NAS9-19100 Science Engineering Analysis & Test		02-MP0022
	NASA Center/Division	Revision	Date
	JSC/Systems Engineering Office	Original	06/13/03
Total mass:	15287. lb		
	6934. kg		
Center of mass:			
	X	Y	Z
	-129.95	.04	13.56 ft
	-39.61	.01	4.13 m
Inertia tensor*:			
	slug*ft**2		
	3831.	10.	-14.
	10.	23735.	462.
	-14.	462.	23753.
	kg*m**2		
	5194.	13.	-18.
	13.	32180.	626.
	-18.	626.	32205.
Principal moments of inertia (IXX, IYY, IZZ):			
	3831.	23281.	24205. slug*ft**2
	5194.	31566.	32819. kg*m**2
Principal to body roll, pitch, yaw in a 1 2 3 sequence:			
	44.43	.02	-.01 degrees
Center of pressure:			
(WRT CM)	X ft	Y ft	Z ft
CPx	.00E+00	-2.91E-01	3.86E-02
CPy	-1.70E+00	.00E+00	7.61E-02
CPz	-1.69E+00	-1.70E-02	.00E+00
	X m	Y m	Z m
CPx	.00E+00	-8.86E-02	1.18E-02
CPy	-5.19E-01	.00E+00	2.32E-02
CPz	-5.14E-01	-5.19E-03	.00E+00
Projected areas:			
	X	Y	Z
	70.85	238.53	239.79 ft**2
	6.58	22.16	22.28 m**2

*Off-diagonal elements are negative integrals

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Technical Monitor		Title		
T. Farrell/EA4/281-483-8123		International Space Station Program		
Approved By		Body 17		
M. Falou/LM/281-333-6326		ATV		
Produced By	Contract		Item Number	
Theresa Tran	NAS9-19100 Science Engineering Analysis & Test		02-MP0023	
	NASA Center/Division		Revision	Date
	JSC/Systems Engineering Office		Original	06/17/03
Total mass:	44424.	lb		
	20150.	kg		
Center of mass:				
	X	Y	Z	
	-134.15	-.01	13.44	ft
	-40.89	.00	4.10	m
Inertia tensor*:				
	slug*ft**2			
	41214.	185.	203.	
	185.	97519.	-148.	
	203.	-148.	99875.	
	kg*m**2			
	55878.	251.	275.	
	251.	132218.	-201.	
	275.	-201.	135412.	
Principal moments of inertia (IXX, IYY, IZZ):				
	41211.	97508.	99882.	slug*ft**2
	55876.	132207.	135426.	kg*m**2
Principal to body roll, pitch, yaw in a 1 2 3 sequence:				
	-3.56	.20	-.19	degrees
Center of pressure:				
(WRT CM)	X ft	Y ft	Z ft	
CPx	.00E+00	2.17E-02	5.30E-02	
CPy	1.93E+00	.00E+00	5.28E-02	
CPz	1.90E+00	1.61E-02	.00E+00	
	X m	Y m	Z m	
CPx	.00E+00	6.61E-03	1.62E-02	
CPy	5.89E-01	.00E+00	1.61E-02	
CPz	5.79E-01	4.90E-03	.00E+00	
Projected areas:				
	X	Y	Z	
	545.86	386.32	383.31	ft**2
	50.71	35.89	35.61	m**2
*Off-diagonal elements are negative integrals				

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Technical Monitor	Title		
T. Farrell/EA4/281-483-8123	International Space Station Program		
Approved By	Body 18		
M. Falou/LM/281-333-6326	STEP 001 – STEP 003		
Produced By	Contract	Item Number	
Theresa Tran	NAS9-19100 Science Engineering Analysis & Test	03-MP0024	
	NASA Center/Division	Revision	Date
	JSC/Systems Engineering Office	Original	06/13/03
Total mass:	14870. lb		
	6745. kg		
Center of mass:			
	X	Y	Z
	-36.48	-.04	30.93 ft
	-11.12	-.01	9.43 m
Inertia tensor*:			
		slug*ft**2	
	17776.	337.	-3.
	337.	17775.	-3.
	-3.	-3.	3448.
		kg*m**2	
	24101.	456.	-4.
	456.	24100.	-4.
	-4.	-4.	4675.
Principal moments of inertia (IXX, IYY, IZZ):			
	18112.	17438.	3448. slug*ft**2
	24557.	23644.	4675. kg*m**2
Principal to body roll, pitch, yaw in a 1 2 3 sequence:			
	.00	-.02	-44.96 degrees
Center of pressure:			
(WRT CM)	X ft	Y ft	Z ft
CPx	.00E+00	7.54E-03	7.56E-01
CPy	-8.08E-02	.00E+00	7.78E-01
CPz	-1.87E-01	3.68E-01	.00E+00
	X m	Y m	Z m
CPx	.00E+00	2.30E-03	2.31E-01
CPy	-2.46E-02	.00E+00	2.37E-01
CPz	-5.71E-02	1.12E-01	.00E+00
Projected areas:			
	X	Y	Z
	234.18	231.53	69.92 ft**2
	21.76	21.51	6.50 m**2

*Off-diagonal elements are negative integrals

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Technical Monitor		Title		
T. Farrell/EA4/281-483-8123		International Space Station Program		
Approved By		Body 18		
M. Falou/LM/281-333-6326		STEP 004 – STEP 006		
Produced By		Contract		Item Number
Theresa Tran		NAS9-19100 Science Engineering Analysis & Test		03-MP0025
		NASA Center/Division		Revision
		JSC/Systems Engineering Office		Date
		Original		06/13/03
Total mass:		14870. lb 6745. kg		
Center of mass:		X	Y	Z
		-36.61	.01	61.14 ft
		-11.16	.00	18.64 m
Inertia tensor*:				
		slug*ft**2		
		17776.	337.	3.
		337.	17775.	3.
		3.	3.	3448.
		kg*m**2		
		24101.	456.	4.
		456.	24100.	4.
		4.	4.	4675.
Principal moments of inertia (IXX, IYY, IZZ):				
		18112.	17438.	3448. slug*ft**2
		24557.	23644.	4675. kg*m**2
Principal to body roll, pitch, yaw in a 1 2 3 sequence:				
		.00	.02	-44.96 degrees
Center of pressure:				
(WRT CM)		X ft	Y ft	Z ft
		CPx .00E+00	-7.54E-03	7.56E-01
		CPy 8.08E-02	.00E+00	7.78E-01
		CPz 1.87E-01	-3.68E-01	.00E+00
		X m	Y m	Z m
		CPx .00E+00	-2.30E-03	2.31E-01
		CPy 2.46E-02	.00E+00	2.37E-01
		CPz 5.71E-02	-1.12E-01	.00E+00
Projected areas:				
		X	Y	Z
		234.18	231.53	69.92 ft**2
		21.76	21.51	6.50 m**2
*Off-diagonal elements are negative integrals				

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Technical Monitor		Title		
T. Farrell/EA4/281-483-8123		International Space Station Program		
Approved By		Body 19		
M. Falou/LM/281-333-6326		STEP 001 – STEP 005		
Produced By		Contract		Item Number
Theresa Tran		NAS9-19100 Science Engineering Analysis & Test		03-MP0026
		NASA Center/Division		Revision
		JSC/Systems Engineering Office		Date
		Original		06/13/03
Total mass:		15287. lb 6934. kg		
Center of mass:		X	Y	Z
		-77.76	.00	43.42 ft
		-23.70	.00	13.24 m
Inertia tensor*:				
		slug*ft**2		
		24206.	-10.	-8.
		-10.	23282.	-27.
		-8.	-27.	3831.
		kg*m**2		
		32818.	-13.	-11.
		-13.	31566.	-36.
		-11.	-36.	5194.
Principal moments of inertia (IXX, IYY, IZZ):				
		24205.	23281.	3831. slug*ft**2
		32819.	31566.	5194. kg*m**2
Principal to body roll, pitch, yaw in a 1 2 3 sequence:				
		.08	-.04	.57 degrees
Center of pressure:				
(WRT CM)		X ft	Y ft	Z ft
		CPx .00E+00	-5.08E-02	2.34E+00
		CPy 1.62E-02	.00E+00	-5.80E-01
		CPz -2.06E-01	-2.66E-01	.00E+00
		X m	Y m	Z m
		CPx .00E+00	-1.55E-02	7.12E-01
		CPy 4.93E-03	.00E+00	-1.77E-01
		CPz -6.28E-02	-8.10E-02	.00E+00
Projected areas:				
		X	Y	Z
		281.42	169.71	69.65 ft**2
		26.15	15.77	6.47 m**2
*Off-diagonal elements are negative integrals				

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Technical Monitor	Title		
T. Farrell/EA4/281-483-8123	International Space Station Program		
Approved By	Body 19		
M. Falou/LM/281-333-6326	STEP 006		
Produced By	Contract		Item Number
Theresa Tran	NAS9-19100 Science Engineering Analysis & Test		03-MP0337
	NASA Center/Division	Revision	Date
	JSC/Systems Engineering Office	Original	06/13/03
Total mass:	14870.	lb	
	6745.	kg	
Center of mass:			
	X	Y	Z
	-77.79	.04	44.15 ft
	-23.71	.01	13.46 m
Inertia tensor*:			
	slug*ft**2		
	18112.	0.	5.
	0.	17439.	0.
	5.	0.	3448.
	kg*m**2		
	24557.	-1.	6.
	-1.	23644.	0.
	6.	0.	4675.
Principal moments of inertia (IXX, IYY, IZZ):			
	18112.	17438.	3448. slug*ft**2
	24557.	23644.	4675. kg*m**2
Principal to body roll, pitch, yaw in a 1 2 3 sequence:			
	.00	.00	.00 degrees
Center of pressure:			
(WRT CM)	X ft	Y ft	Z ft
CPx	.00E+00	-7.20E-02	1.32E+00
CPy	6.52E-02	.00E+00	-1.50E+00
CPz	-1.56E-01	-2.03E-01	.00E+00
	X m	Y m	Z m
CPx	.00E+00	-2.20E-02	4.02E-01
CPy	1.99E-02	.00E+00	-4.58E-01
CPz	-4.74E-02	-6.19E-02	.00E+00
Projected areas:			
	X	Y	Z
	275.17	159.01	69.94 ft**2
	25.56	14.77	6.50 m**2
*Off-diagonal elements are negative integrals			

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Technical Monitor		Title		
T. Farrell/EA4/281-483-8123		International Space Station Program		
Approved By		Body 20		
M. Falou/LM/281-333-6326		STEP 001 – STEP 006		
Produced By		Contract		Item Number
Theresa Tran		NAS9-19100 Science Engineering Analysis & Test		03-MP0028
		NASA Center/Division		Revision
		JSC/Systems Engineering Office		Date
		Original		06/13/03
Total mass:		551.	lb	
		250.	kg	
Center of mass:		X	Y	Z
		-49.70	11.70	13.65 ft
		-15.15	3.57	4.16 m
Inertia tensor*:				
		slug*ft**2		
		376.	23.	-29.
		23.	309.	-9.
		-29.	-9.	317.
		kg*m**2		
		509.	31.	-39.
		31.	419.	-13.
		-39.	-13.	430.
Principal moments of inertia (IXX, IYY, IZZ):				
		395.	302.	305. slug*ft**2
		535.	409.	414. kg*m**2
Principal to body roll, pitch, yaw in a 1 2 3 sequence:				
		-6.50	-21.59	-17.25 degrees
Center of pressure:				
(WRT CM)		X ft	Y ft	Z ft
		CPx .00E+00	9.28E-02	-1.30E-02
		CPy 1.56E-01	.00E+00	-6.45E-02
		CPz 2.57E-02	-8.10E-02	.00E+00
		X m	Y m	Z m
		CPx .00E+00	2.83E-02	-3.95E-03
		CPy 4.74E-02	.00E+00	-1.97E-02
		CPz 7.82E-03	-2.47E-02	.00E+00
Projected areas:		X	Y	Z
		129.60	105.92	63.75 ft**2
		12.04	9.84	5.92 m**2
*Off-diagonal elements are negative integrals				

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Technical Monitor		Title		
T. Farrell/EA4/281-483-8123		International Space Station Program		
Approved By		Body 21		
M. Falou/LM/281-333-6326		STEP 001 – STEP 006		
Produced By		Contract		Item Number
Theresa Tran		NAS9-19100 Science Engineering Analysis & Test		03-MP0029
		NASA Center/Division	Revision	Date
		JSC/Systems Engineering Office	Original	06/13/03
Total mass:		551. lb		
		250. kg		
Center of mass:		X	Y	Z
		-49.70	-11.73	13.65 ft
		-15.15	-3.58	4.16 m
Inertia tensor*:				
		slug*ft**2		
		376.	-23.	-29.
		-23.	309.	9.
		-29.	9.	317.
		kg*m**2		
		509.	-31.	-39.
		-31.	419.	13.
		-39.	13.	430.
Principal moments of inertia (IXX, IYY, IZZ):				
		395.	302.	305. slug*ft**2
		535.	409.	414. kg*m**2
Principal to body roll, pitch, yaw in a 1 2 3 sequence:				
		6.50	-21.59	17.16 degrees
Center of pressure:				
(WRT CM)		X ft	Y ft	Z ft
		CPx .00E+00	-9.28E-02	-1.30E-02
		CPy 1.56E-01	.00E+00	-6.45E-02
		CPz 2.59E-02	8.10E-02	.00E+00
		X m	Y m	Z m
		CPx .00E+00	-2.83E-02	-3.95E-03
		CPy 4.75E-02	.00E+00	-1.97E-02
		CPz 7.88E-03	2.47E-02	.00E+00
Projected areas:				
		X	Y	Z
		129.60	105.92	63.75 ft**2
		12.04	9.84	5.92 m**2
*Off-diagonal elements are negative integrals				

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Technical Monitor		Title		
T. Farrell/EA4/281-483-8123		International Space Station Program		
Approved By		Body 22		
M. Falou/LM/281-333-6326		STEP 001 – STEP 006		
Produced By		Contract		Item Number
Theresa Tran	NAS9-19100 Science Engineering Analysis & Test		03-MP0030	
	NASA Center/Division		Revision	Date
	JSC/Systems Engineering Office		Original	06/13/03
Total mass:		1279. lb		
		580. kg		
Center of mass:		X	Y	Z
		-90.77	26.53	13.59 ft
		-27.67	8.09	4.14 m
Inertia tensor*:				
		slug*ft**2		
		6960.	0.	0.
		0.	418.	0.
		0.	0.	7372.
		kg*m**2		
		9436.	0.	0.
		0.	567.	0.
		0.	0.	9995.
Principal moments of inertia (IXX, IYY, IZZ):				
		6959.	418.	7372. slug*ft**2
		9436.	567.	9995. kg*m**2
Principal to body roll, pitch, yaw in a 1 2 3 sequence:				
		.00	.02	.00 degrees
Center of pressure:				
(WRT CM)		X ft	Y ft	Z ft
		CPx .00E+00	1.15E-01	6.07E-03
		CPy 8.24E-02	.00E+00	9.73E-03
		CPz -1.08E-01	1.83E+00	.00E+00
		X m	Y m	Z m
		CPx .00E+00	3.51E-02	1.85E-03
		CPy 2.51E-02	.00E+00	2.96E-03
		CPz -3.30E-02	5.58E-01	.00E+00
Projected areas:		X	Y	Z
		16.19	5.23	478.94 ft**2
		1.50	.49	44.49 m**2
*Off-diagonal elements are negative integrals				

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Technical Monitor		Title		
T. Farrell/EA4/281-483-8123		International Space Station Program		
Approved By		Body 23		
M. Falou/LM/281-333-6326		STEP 001 – STEP 006		
Produced By		Contract		Item Number
Theresa Tran		NAS9-19100 Science Engineering Analysis & Test		03-MP0031
		NASA Center/Division	Revision	Date
		JSC/Systems Engineering Office	Original	06/13/03
Total mass:		1279. lb		
		580. kg		
Center of mass:		X	Y	Z
		-90.77	-26.49	13.59 ft
		-27.67	-8.07	4.14 m
Inertia tensor*:				
			slug*ft**2	
		5875.	0.	0.
		0.	357.	0.
		0.	0.	6227.
			kg*m**2	
		7965.	0.	0.
		0.	484.	0.
		0.	0.	8442.
Principal moments of inertia (IXX, IYY, IZZ):				
		5875.	357.	6226. slug*ft**2
		7965.	484.	8442. kg*m**2
Principal to body roll, pitch, yaw in a 1 2 3 sequence:				
		.00	.02	.00 degrees
Center of pressure:				
(WRT CM)		X ft	Y ft	Z ft
		CPx .00E+00	-2.06E-01	6.05E-03
		CPy -2.95E-01	.00E+00	9.46E-03
		CPz -1.02E-01	-1.91E+00	.00E+00
		X m	Y m	Z m
		CPx .00E+00	-6.27E-02	1.84E-03
		CPy -9.00E-02	.00E+00	2.88E-03
		CPz -3.11E-02	-5.82E-01	.00E+00
Projected areas:				
		X	Y	Z
		16.20	5.22	478.94 ft**2
		1.50	.49	44.49 m**2
*Off-diagonal elements are negative integrals				

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Technical Monitor	Title		
T. Farrell/EA4/281-483-8123	International Space Station Program		
Approved By	Body 29		
M. Falou/LM/281-333-6326	HTV		
Produced By	Contract		Item Number
Theresa Tran	NAS9-19100 Science Engineering Analysis & Test		03-MP0038
	NASA Center/Division	Revision	Date
	JSC/Systems Engineering Office	Original	06/13/03
Total mass:	31526. lb		
	14300. kg		
Center of mass:			
	X	Y	Z
	35.87	.01	33.79 ft
	10.93	.00	10.30 m
Inertia tensor*:			
	slug*ft**2		
	96104.	0.	0.
	0.	96104.	0.
	0.	0.	30461.
	kg*m**2		
	130300.	0.	0.
	0.	130300.	0.
	0.	0.	41300.
Principal moments of inertia (IXX, IYY, IZZ):			
	96101.	96101.	30460. slug*ft**2
	130300.	130300.	41300. kg*m**2
Principal to body roll, pitch, yaw in a 1 2 3 sequence:			
	.00	.00	.00 degrees
Center of pressure:			
(WRT CM)	X ft	Y ft	Z ft
CPx	.00E+00	-7.57E-04	4.10E+00
CPy	1.53E-05	.00E+00	4.10E+00
CPz	1.31E-02	1.10E-02	.00E+00
	X m	Y m	Z m
CPx	.00E+00	-2.31E-04	1.25E+00
CPy	4.77E-06	.00E+00	1.25E+00
CPz	4.00E-03	3.37E-03	.00E+00
Projected areas:			
	X	Y	Z
	403.30	403.15	152.96 ft**2
	37.47	37.45	14.21 m**2
*Off-diagonal elements are negative integrals			

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APPENDICES

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APPENDIX A
ACRONYMS AND ABBREVIATIONS

A

A	American
A/R	American/Russian
AMS	Alpha Magnetic Spectrometer
APAS	Androgynous Peripheral Attach System
APFR	Articulating Portable Foot Restraint
AR	After Rendezvous
AS	After Separation
ATV	Automated Transfer Vehicle

B

BPM	Biological Production Module
BS	Before Separation
BSP	Band Signal Processor

C

CAD	Computer Aided Design
CAM	Centrifuge Accommodations Model
CBM	Common Berthing Mechanism
CETA	Crew and Equipment Translation Assembly
COF	Columbus Orbital Facility
CP	Center of Pressure or Cold Plate
CSA	Canadian Space Agency

D

DC	Docking Compartment
DCN	Design Change Notice
DCSU	Direct Current Switching Unit
DDCU	Direct current-to-Direct current Converter Unit

E

EA4	Systems Engineering Office [NASA/JSC]
EAS	Early Ammonia Servicer
EATCS	External Active Thermal Control System
EDS	Electronic Data Systems
EEATCS	Early External Active Thermal Control System
EF	Exposed Facility
ELM-ES	Experimental Logistics Module Exposed Section

ELM-PS	Experimental Logistics Module Pressurized Section
ESA	European Space Agency
ESP	External Stowage Platform
EVA	Extravehicular Activity

F

FGB	Functionalni Gruzvoi Blok [Russian] (Functional Cargo Block)
FPMU	Floating Potential Measurement Unit
ftp	File Transfer Protocol

G

H

HPGA	High Pressure Gas Assembly
http	hypertext transfer protocol
HTV	H-II Transfer Vehicle

I

I-DEAS	Integrated Design Engineering Analysis Software
ICC	Integrated Cargo Carrier
IGES	International Graphics Exchange Standard
INT	Intermediate
ISS	International Space Station
ISSP	International Space Station Program
ITS	Integrated Truss Segment

J

JEM	Japanese Experimental Module
JSC	(Lyndon B.) Johnson Space Center

K

KhSC	Khrunichev State Research and Production Space Center
Ku-Band	15.250 to 17.250 Gigahertz

L

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LCA	Laboratory Cradle Assembly
LEE	Latching End Effector
LM	Lockheed Martin
LMSO	Lockheed Martin Space Operations
LVLH	Local Vertical/Local Horizontal

M

MBS	MRS Base System
MBSU	Main Bus Switching Unit
MISSE	Materials ISS Experiment
MOD	Mission Operations Directorate
MODGEN	<i>MODeI GENerator</i>
MPAC	Micro-Particle Capture
MPLM	Multi-Purpose Logistics Module
MBSU	Main Bus Switching Unit
MPVSET	Mass Properties Verification and Sustaining Engineering Tool
MRS	Mobile Remote Servicer
MT	Mobile Transporter
MTsM	Mnogo Tselevoi Modul [Russian] (Multi Purpose Module)

N

NASA	National Aeronautics and Space Administration [United States]
NASDA	National Space Development Agency [Japan]
NSTS	National Space Transportation System

O

ODS	Orbiter Docking System
OM	ISS Mission Integration Office (organization code)
ORU	On-orbit Replacement Unit; Orbital Replacement Unit
OSE	Orbital Support Equipment
OSRS	Orbiter Structural Reference System
OTD	ORU Transfer Device
OV	Orbiter Vehicle

P

P	Progress; Port
PAS	Payload Attachment System
P1	Port 1
PDGF	Power and Data Grapple Fixture
PFCS	Pump and Flow Control Subassembly
PFRWS	Portable Foot Restraint Work Station

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PIT	Physical Integration Team [Boeing]
PM	Pressure Module; Propulsion Module
PMA	Pressurized Mating Adapter
POA	Payload ORU Accomodation
POF	Port Outboard Forward
PV	Photovoltaic
PVRGF	Photovoltaic Removable Grapple Fixture
PVTCS	Photovoltaic Thermal Control System
PWP	Portable Work Platform

R

R	Russian
RAI	Resource Analysis and Integration
RMS	Remote Manipulator System
RPO	Research Program Office
RSA	Russian Space Agency
RSC-E	Rocket Space Corporation-Energia

S

S	Soyuz
SARJ	Solar Alpha Rotary Joint
SDRC	Structural Dynamics Research Corporation
SEED	Space Environment Exposure Device
SEMDA	Systems Engineering, Modeling, and Design Analysis
SHOSS	Spacehab Oceaneering Space System
SOA	Starboard Outboard Aft
SODB	(Space) Shuttle Operational Data Book
SOF	Starboard Outboard Forward
SPDM	Special Purpose Dexterous Manipulator
SPP	Science Power Platform
SSACS	Space Station Analysis Coordinate System
SSCB	Space Station Control Board
SSP	Space Shuttle Program
SSRMS	Space Station Remote Manipulator System
STS	Space Transportation System

T

TCS	Thermal Control System
TIM	Technical Interchange Meeting
TM	Transport Spacecraft, Modified

U

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U
UF Utilization Flight
UHF Ultra High Frequency
ULF Utilization Logistic Flight
UT Universal Translator

V

VAC Verification Analysis Cycle
VIPeR Vehicle Integrated Performance and Resources [team]
VSSA Video Stanchion Support Assembly

W

WETA WVS External Transceiver Assembly
WIF Worksite Interface
WVS Wireless Video Systems

X, Y, Z

Z1 Zenith 1

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APPENDIX B
COMPONENT DEFINITIONS
PREFIXES

P1	First port truss section, outboard of the middle truss section
P3	Second port truss section, outboard of P1
P4	Third port truss section, subject to alpha rotation
P5	Fourth port truss section, subject to alpha rotation
P6	Fifth port truss section (subject to alpha rotation)
PIA	Port inboard aft
PIF	Port inboard forward
POA	Port outboard aft
POF	Port outboard forward
S0	Zero, or Middeck truss section, formerly called M1
S1	First starboard truss section, outboard of middle ITA
S3	Second starboard truss section, outboard of S1
S4	Third starboard truss section, subject to alpha rotation
S5	Fourth starboard truss section, subject to alpha rotation
S6	Fifth starboard truss section, subject to alpha rotation
SIA	Starboard inboard aft
SIF	Starboard inboard forward
SOA	Starboard outboard aft
SOF	Starboard outboard forward
Z1	Zenith, first truss section on Node 1

COMPONENT DEFINITIONS (continued)
SUFFIXES

xx_AS	<u>After Separation</u> : A free-flying configuration immediately after Orbiter or Progress vehicle undocking.
xx_AR	<u>After Rendezvous</u> : An Orbiter-attached configuration immediately after docking and before payloads unloaded, a Space Shuttle mission phase.
xx_INTx	<u>Intermediate</u> : An Orbiter-attached configuration partially unloaded, a potential Space Shuttle mission phase. A number after 'INT' designates one of multiple intermediate configurations. No number indicates that a single intermediate configuration exists.
xx_BS	<u>Before Separation</u> : An Orbiter-attached configuration immediately before undocking and after payloads unloaded, a Space Shuttle mission phase.
xS_ARx	<u>Soyuz Relocation</u> : A configuration after a Soyuz undocks, moves to another location, and re-docks to the ISS. The number before 'S' indicates the stage that the Soyuz vehicle was launched.

APPENDIX C
DATA BOOK SPECIFICATIONS

ITEM	VARIABLE	SPECIFICATION
VOLUMES	TWO	I and II
VERSION	NUMBER	JSC 26557 REVISION P; VOLUME I and II
VERSION	NUMBER	LESC 31166 REVISION P; VOLUME I and II
MANUAL	SOFTWARE	<i>MICROSOFT WORD 2000</i>
COVER	FONT SIZE	Arial 10, 12, 18, 20, 24-point
PAGE	SIZE	8 ½-inch X 11-inch
PAGE	FORMAT	Portrait and Landscape (Figures or Tables)
LOGO	NASA	<i>MICROSOFT WORD</i>
LOGO	LOCKHEED MARTIN	<i>MICROSOFT WORD</i>
TEXT	ACRONYMS	Identified once at first use only
TEXT	FONT	Arial 12-point
TEXT	HEADINGS	No Bold ; no <u>underlines</u> ; ALL CAPS; Left
TEXT	MARGINS	Left: 1.2-inches; others 1-inch; mirror pages
TEXT	SPACING	Flush left; ragged right
TEXT	INDENT	¼-inch then ½-inch
TEXT	LISTS	Bullets unless order is required
TABLES	TITLE/TEXT	Title at top; Arial 10-point
FIGURES	TITLE/TEXT	Title at bottom; Arial 12-point
HEADER	RIGHT CORNER	JSC Document number, revision, volume
REFERENCE	DOCUMENT/SOFTWARE	<i>Italics</i>
FOOTER	RIGHT CORNER	LESC Document number, revision, volume
FOOTER	PAGE NUMBERS	1-1, 2-1, 3-1, 4-1, 5-1, 6-1, 7-1
FOOTER	APPENDICES PAGES	A-1, B-1, C-1, IND-1
HEADER/FOOTER	FONT SIZE	Arial 9-point
PAGE	Blanks	"This page included for formatting purposes."

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APPENDIX D
SOLAR ARRAY AND SARJ ROTATIONAL CONVENTIONS

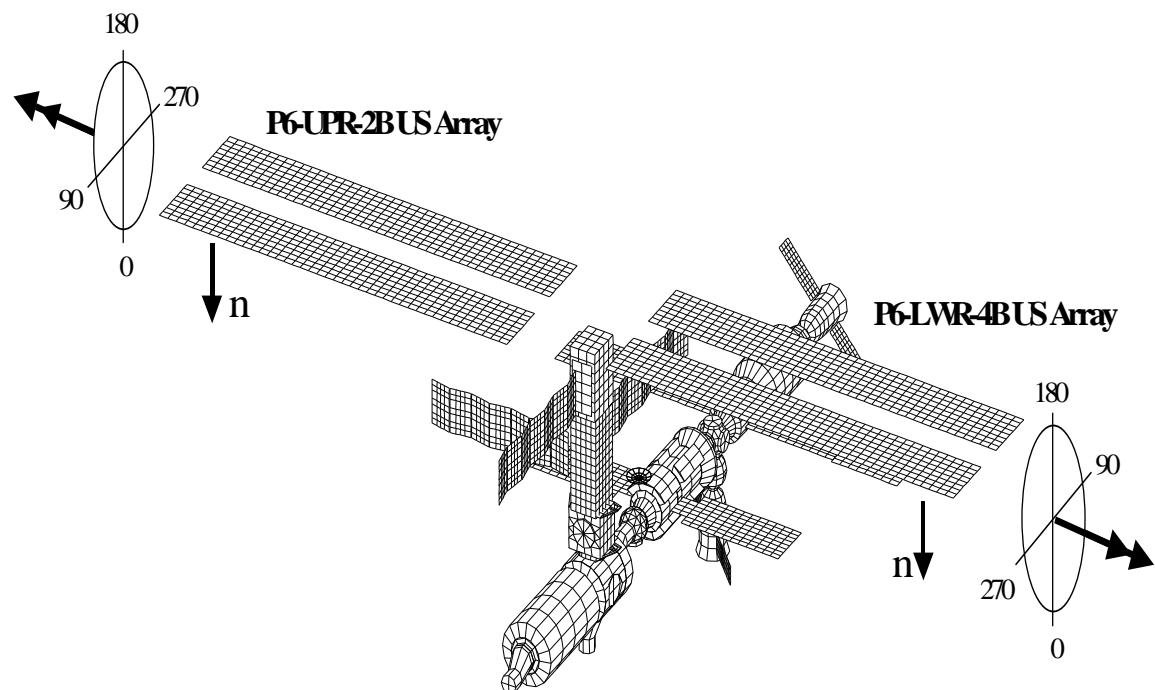


Figure D-1 US Solar Array Conventions Phase 1 Complete

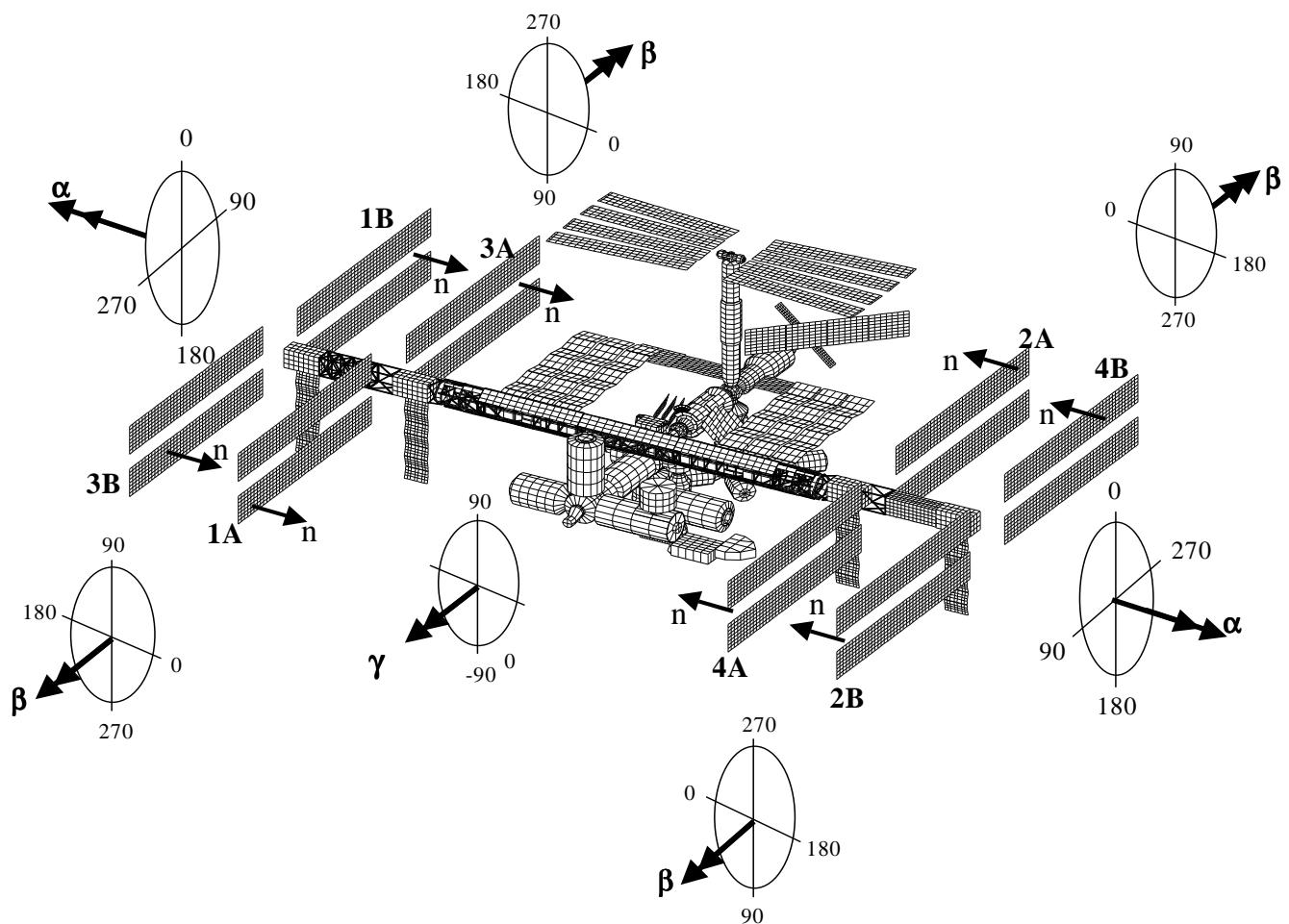


Figure D-2 US Segment Solar Array & Radiator Conventions Assembly Complete

APPENDIX E
WORKSITE NAMING CONVENTIONS

WORKSITE	BOEING ITS BAY	MOD ITS BAY	ISS ITS BAY
NOMENCLATURE			
Worksite #1	S3B2	S3B2	S3B17
Worksite #2	S1B2	S1B2	S1B13
Worksite #3	S1B6	S1B6	S1B5
Worksite #4	S0B2	S0B2	S0B1
Worksite #5	S0B5	S0B5	S0B4
Worksite #6	P1B6	P1B1	P1B6
Worksite #7	P1B2	P1B5	P1B14
Worksite #8	P3B2	P3B1	P3B18
Worksite #9	S6B?	S6B?	S6B?
Worksite #10	P6B?	P6B?	P6B?

Table E-1 Naming Convention for the MT Worksites